

No. 32, July 26, 2013

## Asian Societies and Climate Change: The Variable Diffusion of Global Norms

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**Abstract:** Through the promulgation of science, norms and rules about climate change, the United Nations has been trying to build a global community of agreement, concern and action. This essay compares the changing response of five Asian societies, namely, China, India, Japan, South Korea and Taiwan to the emerging UN global climate change community. Data comes from the content analysis of Asian newspapers from 1997 to 2010, with a special focus on 2007-8. The global average and the Asian societies paid increasing attention to climate change, but only episodic focus to the Intergovernmental Panel on Climate Change. The relatively low level paid by Taiwan indicates the positive effect of membership in the UN system on global climate change coverage. The Asian societies framed climate change in different ways, indicating the effect of divergent domestic factors with data from the international project Comparing Climate Change Policy Networks (Compon).

**Keywords:** Asia, climate change, content analysis, discourse, framing, global community, media studies, United Nations

“Climate change is the defining challenge of our time. I also believe it is the most potent game-changer for business over the next century. It is an opportunity we must seize.”

Ban-Ki Moon (Moon 2009)

- 1 This essay compares the evaluations of global climate change by newspapers in five Asian societies, including China, India, Japan, South Korea and Taiwan, and analyzes the evidence they provide for integration into a global climate change community. In social science

terms, this project analyzes how the discourse found in newspaper articles frames the issue of climate change. The term discourse refers to the talk and text around a subject matter, while framing refers to the way the subject is evaluated. Newspapers strongly affect the public understanding of climate change and consequently, they constitute the newspaper discourse sphere of a society. Newspaper content is an important barometer of a society's orientation and action toward an issue such as global climate change.

- 2 Since the late 1980s, the United Nations has been trying to build a global climate change community with a common understanding and normative commitment. UN efforts have promulgated scientific findings, established agreement on basic norms, and then obtained agreements from most of the industrialized societies to reduce their emissions by specific percentages. Unfortunately, these efforts have failed to stop the rising tide of global carbon dioxide emissions (Alley 2007, New et. al. 2011). This failure indicates the strength of divisive factors preventing more effective global agreements and suggests the need to pay more attention to how individual societies understand as well as respond to UN efforts (Broadbent 2010).
- 3 The present essay examines the newspaper discourse sphere of five Asian societies along several dimensions. It analyzes the changing coverage of climate change, the evolving attention paid to the Intergovernmental Panel on Climate Change (IPCC), and also the scale as well as framing of their climate change news. Scale indicates the degree to which the newspaper discourse sphere reports on climate change events occurring in foreign versus in domestic locations. Whereas, frame refers to the topical context given to climate change by the article. We coded the articles into six types of frames: policy-making, economy and energy, ecology and meteorology, science and technology, civil society, and culture.
- 4 The data consist of a count of articles mentioning the keyword climate change (or global warming) from the six Asian societies during the years 1997 to 2010, and a detailed coding of their content for the years 2007 and 2008. Both years were quite important in the growth of global attention to climate change as a common global issue. In 2007, the IPCC issued its path-breaking Fourth Annual Report and also received the Nobel Peace Prize. While 2008 was the first year of the 2008-12 Commitment Period of the Kyoto Protocol when the industrialized societies that had ratified the Protocol were supposed to have achieved their targets for the reduction of carbon dioxide emissions. The IPCC and the Commitment Period grew out of the emerging global climate change "regime" (set of mutually-agreed upon understandings, norms and agreements) established primarily through the United Nations. Despite these landmark events, this emerging global regime has not yet succeeded in its goal to halt or reverse the rapid growth of carbon dioxide emissions into the global atmosphere.
- 5 The general intent of the Compton research project (Comparing Climate Change Policy Networks) is both scientific and practical. The whole project compares responses to climate change in nineteen societies around the world. Teams in seventeen of these societies conducted the newspaper content analysis that contributes to the present essay. The practical goal is to contribute to inter-societal

dialogue seeking the most appropriate individual and mutual responses. The social scientific goal is to uncover the deeper social laws or generalizations that may be governing the individual and collective responses of societies to this new risky global issue.

## **Background**

- 6 It is now virtually universally accepted by peer-reviewed scientific publications in climate science that greenhouse gasses, especially carbon dioxide, released by the human combustion of fossil fuels is the major cause of the recent, relatively rapid warming of the earth's atmosphere and surface (Oreskes 2004). If human society does not radically reduce the amount of these gasses it emits, the severity of the resultant disasters will increase at great cost to humans as well as other species and the ecosystems (Hansen 2009; Adger, et al., 2007: 16).
- 7 The Western industrialized societies bear the most responsibility of the human-caused carbon dioxide in the global atmosphere that is causing global climate change. But at the present time, in terms of current emissions, the Asian societies have also become big emitters. This means that, purely in terms of the chemistry of the atmosphere, it will not be possible to greatly reduce the annual amount of new emissions unless all major emitters bear some of the burden. International negotiations have largely foundered on disagreements as to the proportional size of the reduction burden to be borne by the already industrialized versus the less developed societies.
- 8 Asia is deeply entangled with this global climate change, both as victim and cause. According to a recent study, it is the global region most directly vulnerable to disasters caused by climate change. By this measure, the most vulnerable societies in the world are China, India, Bangladesh, Vietnam, Philippines and the Hong Kong Special Administrative Region of China (Hanson, et. al. 2011; Wheeler 2011; Center for Global Development 2013).
- 9 The United States and Europe, due to their early industrialization, were by 2003 responsible for 56% of the cumulative human-caused carbon dioxide emissions in the global atmosphere (Wald 2012). Yet, the Asian societies are catching up fast in their proportion of current emissions. During recent decades, the Asian societies astounded the world with their rapid industrial growth and much of this growth, as with the early industrializers, has been based on fossil fuels. In 2006, China overtook the United States to become the world's largest current emitter of carbon dioxide. Even within Asia, while the early industrializer Japan bears more historical responsibility, its 2008 share of global emissions (4%) was already dwarfed by that of China (23%) (Agency 2013; Van der Hoeven 2012). At the present time, the chemistry of the atmosphere indicates that stabilization and then reduction of carbon dioxide concentrations in the atmosphere requires cooperation by all major emitters (Anderson and Bows 2011).
- 10 Concerned persons, groups and societies around the world have been working to establish global cooperation, most conspicuously through

the United Nations. This kind of international cooperation can spread by the diffusion and acceptance of different incentives. There are various theories that differ on the most important incentives. Traditional international relations theory is that any international order grows out of the struggle between clearly defined national interests. However, more recent theories contend that a more cooperative order can result from the diffusion and acceptance of new beliefs and norms, upon which new rules can be founded. Specifically regarding international environmental cooperation, studies and theorists have arisen that exemplify each of those viewpoints. For instance, the spread and acceptance of a set of scientific findings can result in an “epistemic community” that exerts pressure upon policy formation (Haas 1992; Hulme and Mahoney 2010). In contrast, the diffusion of a set of moral norms can provide additional impetus to take action on the basis of the credible knowledge (Frank, Hironaka, and Schofer 2000). Going beyond concepts and norms, formal protocols aim at getting nations to accept specific goals of action along with sanctions for their non-attainment (Bodansky 2009; Yamin and Depledge 2005).

- 11 Regarding climate change, a global community composed of these three different aspects—concepts, norms and rules—has been slowly and hesitantly emerging around the world since 1988 with uneven incorporation of countries and societies into its three aspects. The core of this emerging community has been the United Nations. International negotiations through the United Nations have established global institutions that embodied these three aspects of global community: provision of scientific information (IPCC), formation of norms (UNFCCC), and establishment of rules and concrete targets for emissions reductions (Kyoto Protocol) (Broadbent 2010).
- 12 The first stage was accomplished by the 1988 formation of the Intergovernmental Panel on Climate Change (IPCC) under UN auspices and funded by partner governments to collect and present the best scientific findings on climate change (Bolin 2007). The IPCC has issued four assessment reports of the science (1990, 1995, 2001, 2007). Each one has expressed a higher level of certainty in the geochemical findings that current rapid climate change is caused by human activities (primarily, carbon dioxide released by the burning of fossil fuels) and that this warming climate will cause increasingly severe disasters if concentrations of these gasses continues to increase. Therefore, each IPCC assessment report represents an increased solidification of the global scientific knowledge about climate change.
- 13 The second stage, normative principles, was accomplished at the United Nations Conference on Environment and Development in Rio de Janeiro during 1992. The purpose of the UNFCCC treaty was to keep greenhouse gasses from causing “dangerous anthropogenic interference with the climate system.” It contained no binding commitments or sanctions, but set up the negotiating framework that could reach international agreements. This treaty came into force in 1994 with 194 signing countries. The subsequent Conferences of Parties (COPs) have negotiated substantive commitments on meeting these normative goals (Garcia 2010)

- 14 The third stage in the formation of the international regime, rules and targets was formed at the 1997 Third Conference of Parties (COP3) hosted by Japan in Kyoto. The purpose of COP3 was to make a binding enforceable treaty with specific obligations to reduce carbon dioxide emissions. The meeting created a treaty, known as the Kyoto Protocol, with targets for industrialized countries to reduce their carbon dioxide emissions below their 1990 levels by certain percentages, averaging around 6 percent reduction. They were required to make these reductions by the commitment period of 2008-2012. The less developed societies were not given obligatory targets.
- 15 Knowledge, norms and rules, these three stimuli, have diffused from the global UN activities into various societies with different levels of speed, penetration, acceptance and results. The world will only be able to reduce emissions enough to head off continued warming if the major emitting societies accept common knowledge, norms and rules about climate change and find ways to cooperate on that basis. The more fully societies around the world come to agree on common scientific knowledge about the causes, accept norms of action and agree to take on their proper burden in the overall effort then the more likely will be the reduction of emissions and avoidance of preventable warming.
- 16 From this perspective, there has been an insufficient diffusion of a common set of global knowledge, norms and rules (whether from the UN or elsewhere). Societies of the world have not been able to forge an effective agreement on reducing total emissions at the global level. The Kyoto Protocol induced some industrialized societies to somewhat reduce their emissions. But a number of the industrialized societies that ratified the Protocol were not able to make much progress toward their reductions targets. One major industrial society, the United States, refused to even ratify the Protocol and accept a reductions target. The fulfillment period of the Kyoto Protocol (2008-2012) is now over. Any post-Kyoto agreement will have to include all the major emitters. Given the uneven accomplishments of the Kyoto Protocol, some observers despair about finding an acceptable mechanism of burden-sharing and effective emissions reductions.
- 17 These insufficient results have turned attention to the distinct societies themselves in order to better understand particular motivations and situations. Such research can improve the transparency of communications among the societies, which hopefully will build trust and lead toward improved cooperation toward solutions. At the same time, the project has a scientific mission. In creating global climate change, humanity is imposing a vast, unprecedented experiment upon itself. From a purely detached, "disinterested," scientific viewpoint, the curious question is, at what point of increasing pain from climate change-driven disasters, if ever, will this species decide to remove the causes of the pain, as best it can after the infection has gone so far? The situation represents a perfect quasi-experimental design for social scientific research. Societies of different background factors are responding at differential rates of expediency to take preventative measures against a common threat. The Compton project utilizes this situation as a research opportunity.

## **Project Orientation**

- 18 In 2007, the Compon project was launched to contribute to this practical political goal as well as clarify the underlying social principles that drive societies' different responses to the mitigation problem.[1] The project acronym Compon stands for Comparing Climate Change Policy Networks and as the title indicates, it uses an objective scientific approach to measure the types of coverage in the native-language newspapers of different societies. The results are reported below while a second phase of the project, not reported here, uses a survey to study how different organizations in the society evaluate and act on the mitigation issue. The Compon project members made great efforts to develop and use objective research instruments at the highest standards of social science research. These methods include a common method for selecting and analyzing the content of newspaper articles. From three major newspapers in each society, using computerized databases, researchers selected articles that contained substantive discussion around the two key words, climate change and global warming. The content of these articles was then coded according to indicators used by all the research teams.
- 19 The Compon project includes standard teams in 19 societies (or cases). Seventeen of these follow the regular protocol, while two (Indonesia, Vietnam) focus on the issue of REDD+ (Reducing Emissions from Deforestation and Forest Degradation). In rough geographic clustering, the seventeen regular cases are now largely completed (in the media analysis phase include the United States, Canada, Mexico, Brazil, Japan, South Korea, China, Taiwan, New Zealand, India, Sweden, the United Kingdom, Ireland, Germany, Greece, Switzerland and Portugal). Because our study includes Taiwan, for generic reference we use the term "society" or "case" instead of nation. In Asia, the regular teams consist of the cases of Japan, South Korea, China, India and Taiwan.
- 20 The societies in the Compon study differ hugely among themselves in geography, size, cultural qualities and social institutions as well as their emissions trajectories, mitigation policies and performance. For the purposes of the present scientific study, however, each society represents an equivalent case as in a case of response to climate change. This approach is typical of comparative studies (Ragin 1987; Tilly 1984). The Compon project then extracts aligned comparable data from all the cases to ensure the most rigorous comparison. The present essay uses one type of project data, newspaper discourse about climate change. In this analytical and data perspective, the societies studied in the project constitute equivalent comparative cases.
- 21 Demonstrating the high scientific standards of the project and the teams, a number of the teams have received grants from their national science foundations to carry out the study. These include the teams of Japan, South Korea, China and Taiwan as well as others around the world. In addition, the central coordinating office of the whole Compon project, located at the University of Minnesota (USA)

received initial funding for the whole project in 2008 from the US National Science Foundation. This initial grant provided funding for the central office as well as the cases of the United States, India, China, and start up grants to Japan, Germany and the United Kingdom.

- 22 The findings reported in this essay come from the first research phase of the Compon project and concern the content analysis of newspaper data from the Asian societies. Despite the growth of Internet communications, newspapers remain the most prevalent common source of information. The way that newspapers cover and interpret an issue reveals much about what the society and government are doing, or are likely to do, about the issue. Newspapers convey government decisions about major issues and can also represent debates about policy issues in the government and the public. Beyond the discussion of technical points about specific government policies, newspapers also reveal much more about how an issue is being understood and interpreted by the government and society. These public understandings and interpretations provide strong indicators about the reasons lying behind and motivating the government policies and societal ways of responding to an issue. Comparing the newspaper coverage and content around climate change and mitigation in China, India, Japan, South Korea and Taiwan reveals distinct trajectories of intensity as well as the understanding and approaches to the problems.
- 23 In the terms of social science, the analysis of the content of newspaper articles conducted here achieves greater significance as the study of *discourse* and *framing*. Newspaper articles come and go, but when looked at as a whole within a society they take on a certain flavor or tenor that indicates important orientations holding sway in the larger society. The term *discourse* refers to the words and concepts used to describe phenomena that are exchanged as meaningful communication among the members of a society (Carvalho 2010; Sonnett 2010). The words in currency relate to the intentions of the users, sometimes directly but sometimes in deceptive ways. Examination of discourse is one way to identify and compare the distinct orientations and thought-processes of different social groups on any level, including across societies.
- 24 The concept of *framing* adds to the study of discourse by providing some tool for the more distinctive inspection of the words and concepts. A frame is a “schemata of interpretation” that labels an event or “thing” with certain orienting meanings that guide understanding and action (Snow, Rochford, Worden, and Benford 1986). A given “thing” can be framed in very different and competing ways. For instance, in the debate over the right to have an abortion in the United States, conservatives frame the issue as “murder of a tiny human being” while liberals frame the issue as “a woman’s right to choose.” Both of these competing frames seek to activate strongly held primary values in Americans, including on the one hand prevention of murder, but on the other, the right to personal freedom. In a different society, such as Germany, abortion is framed in very different ways again (Ferree 2002).
- 25 The concept of frame is used extensively in the analysis of newspaper articles, legislative records, and other written and spoken media

about the topic of climate change (Antilla 2005; Boykoff 2008; Fisher, Leifeld, and Iwaki 2012; McCright and Dunlap 2000; Trumbo 1996). Scholars and advocacy organizations have issued special studies and guidelines on how to effectively frame the climate change issue to educate or convince the public and politicians (Boykoff and Boykoff 2007; Nisbet 2009). Building on this work, the Compton project develops the coding procedures for several types of frames to compare across the seventeen societies in the full study and some initial findings here reported for the Asian societies.

- 26 The way that newspapers frame an issue may influence the agenda of public support and political action (McCombs and Shaw 1972). The extent of the newspaper agenda-setting influence has been much debated and certainly depends in any event upon such factors as the political context (Liu, Lindquist, and Vedlitz 2011; McCombs 2004; Soroka 2003). Conversely, the factors that shape the content of the news have also been extensively discussed (Herman and Chomsky 2002; Schudson 2003). To an American scholar, it seems uncontroversial to state in general terms that the media is “a site on which various social groups, institutions, and ideologies struggle over the definition and construction of social reality” (Gamson 1992). The degree to which the press reflects the full range of opinions throughout the society, though, varies greatly among societies. In more restrictive societies, the government or powerful special groups may fully determine the content of the press. Newspapers can function as the conduit for a dominant group to persuade the public or they can function in the reverse to bring a wide range of news about the society to the more isolated elite (Kabashima and Broadbent 1986). In deciding what to print, if anything, about a given subject matter, the newspaper editorial staff has to pick and choose among a variety of ways to present or frame the matter. Even if enjoying relative autonomy, newspapers themselves may represent distinct ideological perspectives and vary in how they cover and frame an issue (Lau 2004). Moreover, newspaper content may rise and fall in issue-attention cycles, responding to public or elite interests in the subject matter (Downs 1972; Liu 2011).
- 27 While these are important issues, this essay restricts its focus to identifying some striking differences in framing among the Asian societies in relation to the emerging global climate change regime of knowledge (IPCC), norms (UNFCCC) and rules (Kyoto Protocol). We do not at this point probe the relation of that content to the factors in society that bring it about, such as discussed above. This deeper analysis will be carried further by the project’s nearly completed collection of articles on all the Compton seventeen cases and their comparative and global analysis.

## **Project Methodology**

- 28 The research teams in the nineteen societies are led by professional social scientists located at universities or research institutes and assisted by graduate students and staff. Since its inception in 2007, the Compton project has held four international workshops to design the common research methods and survey instruments. Project



teams, members and activities are open to public view on the project website. All the research teams use common data-collection instruments and procedures to gather comparable information from the different cases. The data collection and type of analysis is proceeding through two main phases: content analysis of newspaper coverage of climate change and a network survey of organizations engaged in the climate change issue (50 to 100 associations, businesses, agencies in society, politics and government). In the first phase of the project, now largely completed, focused on newspaper content analysis. While the second phase, currently underway, uses a network survey. The present essay analyzes the newspaper data from Phase One restricted to the Asian societies.

29 The first phase focused on newspaper content analysis and followed established models (Boykoff 2008). Each team collected articles with the keywords climate change or global warming (or their equivalents in the domestic language) from the computerized archives of three major national newspapers. The teams selected the most widely read newspapers, and from among them, those of different ideological orientation: conservative, liberal and economic (as defined in the respective societies). The newspaper content was analyzed in three ways at levels of increasing detail:

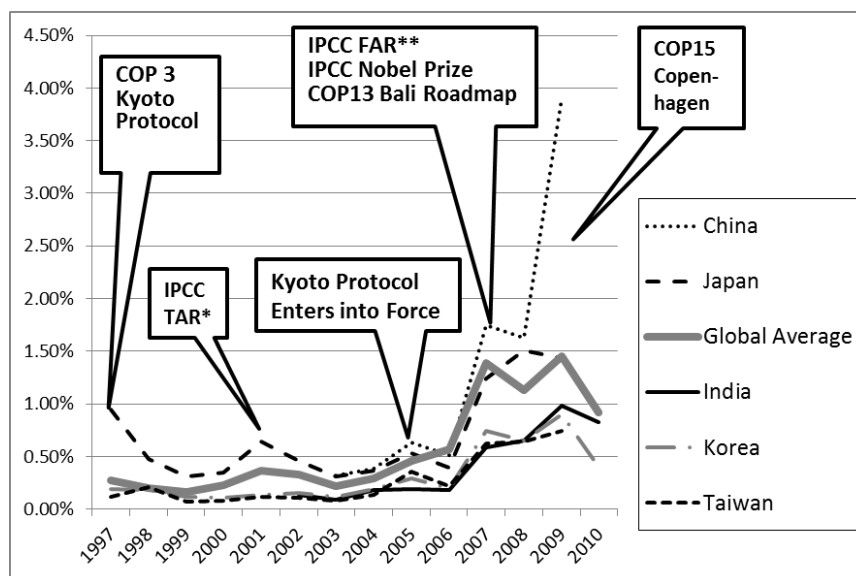
- Level 1: Coding, following previous models, by counting the numbers of articles mentioning the keywords climate change (CC) or global warming (GW) from 1997 to around 2010 (Boykoff 2011; Boykoff and Boykoff 2007). These figures were obtained by using the software provided by the newspaper archival data base service (often Factiva). For this data, all articles containing at least one of the two keywords were counted. The news share statistic presented below is computed by number of keyword articles by the total number of articles in a given newspaper and year. Though each team collected data on three (or if unavailable, two) major newspapers, the statistics in this essay represent the averages of all the newspapers used for the society. These keyword articles were also coded for the number of articles that mentioned the IPCC.
- Level 2: Codes the contents of all or a sample of the CC/GW articles from 2007 and 2008 using a number of coding schemes. This essay will present findings from the following coding schemes: thematic frames and geographical scale (explained below). The project also coded the detailed issues of concern about climate change and these will be reported in another essay. Throughout the project the coordinating office has worked with each team to improve the use of common coding definitions. However, the problems of cross-cultural coding are well known. The coding was carried out under the team leaders by graduate students and hired staff on teams in different societies across multiple languages. Therefore it was not possible to impose tests for inter-coder reliability or ensure exact replication of coding usage across teams, but we are confident that the reliability is sufficient to identify the broad trends discussed.
- Level 3: Codes the relationship between speakers cited in the newspapers and their positions or frames regarding climate change that they advocate. This data allows for the identification of advocacy coalitions as they appear through

the newspaper medium. The present essay does not present findings from this data.

- 30 Each Compon team conducts its own case analysis, but also contributes its data to a common database for use in cross-national comparative analysis developed by the team of the central coordinating office at the University of Minnesota.
- 31 In phase two, currently underway, the teams administer a survey of 50 to 100 organizations engaged pro or con efforts to affect domestic levels of greenhouse gas emissions. The analysis of this direct survey data enables an in-depth inspection of the organizational coalitions that form in different societies to support given climate change frames and policies. The analysis and comparison of this survey data constitutes the next phase of the Compon project. This essay reports on findings using some of the first and second level data from phase one, the newspaper content analysis, for the Asian societies in contrast to the “global” average (that is, the average of the 16 societies in our study).

## Findings

- 32 The relative degree of attention that a newspaper is paying to a given issue can be indicated by the *news share* of articles that mention a keyword and substantively discuss the issue it signifies. This news share is calculated for a given time period (usually, year or month) as the number of articles having substantive discussion of the keyword issue divided by the total number of articles in the newspaper for the year. The news share can be contrasted for different newspapers within one society or averaged for each society and compared across them. Figure One takes the latter approach by showing that the news share of climate change or global warming articles differs greatly across the Asian societies, changes over the years, and differs from the global average (computed as the average of the seventeen cases in the Compon study) (Figure 1).



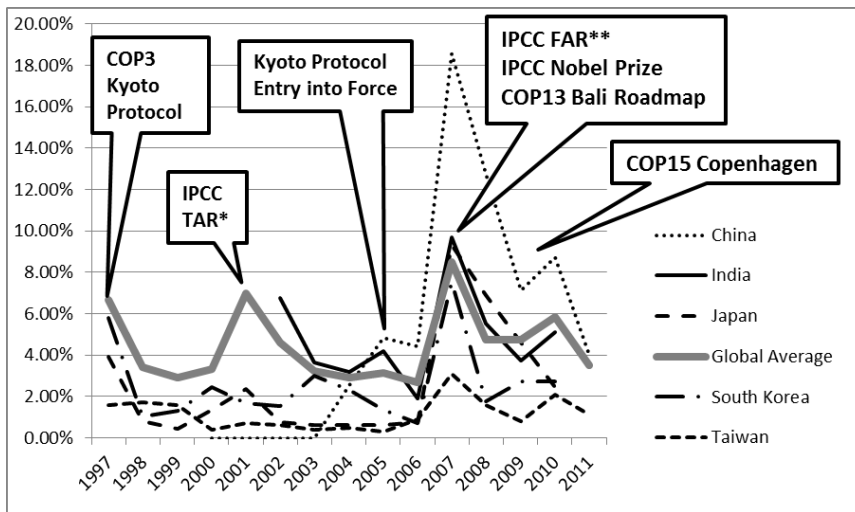
**Figure 1:** Changing News Share of Articles mentioning Keywords

(Climate Change or Global Warming) in Asian Newspapers 1997-2010 (Notes: \*Third Assessment Report, \*\*Fourth Assessment Report).

- 33 The global average trend line travels across peaks and valleys, but shows a gradually rising level of global attention from about 0.25% news share in 1997 to about 1.25% news share in the late 2000s (Figure 1). That indicates a 500% increase in average global attention to the issue. This trend indicates a growing level of attention by societies to the issue of climate change. The peaks correspond to signal events in the emerging global UN-centered climate change community and regime. Of course, attention or coverage does not necessarily indicate agreement with science, norms and rules of this community and regime. Yet, it does indicate engagement with them instead of simply ignoring their existence.
- 34 The timeline starts in 1997 at the time of COP3 that produced the Kyoto Protocol. The Kyoto Protocol built on the science and norms about climate change diffusing from earlier UN sponsored activities. By 1997, the global regime had reached sufficient density of belief in the science and normative support that the industrialized societies agreed to accept targets for reducing their own carbon dioxide emissions (on average to about 6% below their own 1990 levels) by the 2008-2012 “commitment period.” The representatives took this pledge back to their legislatures. Eventually all the major industrialized societies except the United States ratified the commitment. In the meantime, scientific certainty about the anthropogenic causes of climate change and its predicted disastrous consequences increased in the 2001 IPCC Third Assessment Report (TAR), which produced a bump in climate change attention in Japan and the world but not in the other Asian societies. In 2005, the year the Kyoto Protocol entered into force, witnessed a rise in global attention and a bump in attention from all the Asian societies except India.
- 35 The year 2007 produced a dramatic rise in global and Asian attention to climate change (Figure 1). Three signal events in the UN global climate change community occurred in that year. COP13 issued the Bali Roadmap intended to guide the world toward a post-Kyoto reductions agreement that would include the developing societies like China and India. Also the IPCC issued its Fourth Assessment Report (FAR) that stated a much higher certainty in the anthropogenic sources of climate change and its coming disastrous consequences. Additionally in 2007, the IPCC received the Nobel Peace Prize for its efforts at global scientific education.
- 36 By 2008, the first year of the IPCC commitment period, it became evident that only some of the industrialized societies that had ratified the Kyoto Protocol were going to actually attain their promised reduction targets. Germany, United Kingdom, Sweden, Denmark did well, while Japan and Canada fell way behind. In addition, global emissions were continuing to rise precipitously. Therefore, critics judged the Kyoto Protocol harshly. It had only limited success among its ratifiers and would have to be replaced with a new treaty that included the less developed countries, like China and India, which were now pouring huge amounts of emissions into the atmosphere. COP15 met in Copenhagen to carry out the Bali Roadmap and begin

negotiating this new more-inclusive agreement. This meeting was split by harsh debates over the burden of responsibility and the less-developed societies' "carbon right" to keep emitting and growing until they reached parity with the more prosperous Western societies.

- 37 To this transforming global field of discourse and negotiation, the five Asian societies responded in distinct ways. Wanting to take initiative among the highly industrialized societies, Japan hosted the Third Conference of Parties (COP3) in 1997 (Broadbent 2002). As the responsible host, Japanese newspapers devoted strong attention to issues of climate change. Japan's media attention to climate change overall remained above the global average until 2003, when Japan sank to and thereafter remained close to the global trend. However, Japan retained paternalistic pride in having birthed the Kyoto Protocol and continued to pay very close attention to its continuing global politics.
- 38 The other Asian societies, in contrast, paid relative little attention to climate change until around 2004. While they had received scientific information from the IPCC and had signed the 1992 pledge to reduce emissions, as less developed societies, they had not been expected to sign the Kyoto Protocol or to actually reduce emissions until the industrialized societies did so. With many of them beginning or in the midst of their industrial march toward progress, they looked upon the whole problem of climate change with some degree of suspicion and disengagement. After 2004, they commenced a slow rise in attention. In 2007, with the IPCC led by the Indian economist Rajendra Pachauri, the Indian press multiplied its attention to the issue and kept on a relatively upward course after that, attaining the global average by 2010. South Korea and Taiwan also increased attention, but continued below the global average. China, though, displayed an unprecedented and astounding rise in attention to climate change. In 2007, it quickly jumped to above the global average and in 2009 rose precipitously to the very peak of global attention to climate change. This was because China, by then the world's largest emitter of carbon dioxide, took an active role in shaping the post-Kyoto world climate change regime at the Copenhagen COP15 held in December 2009.
- 39 Figure 2 portrays the relative news share of articles that mention the IPCC as a percentage of all the climate change/global warming articles in the major newspaper of a society. That is to say, a society's press can devote more or less attention to the issue of climate change. What is shown here is, within the articles that the press prints about climate change, what proportion of them mention the IPCC. [2]

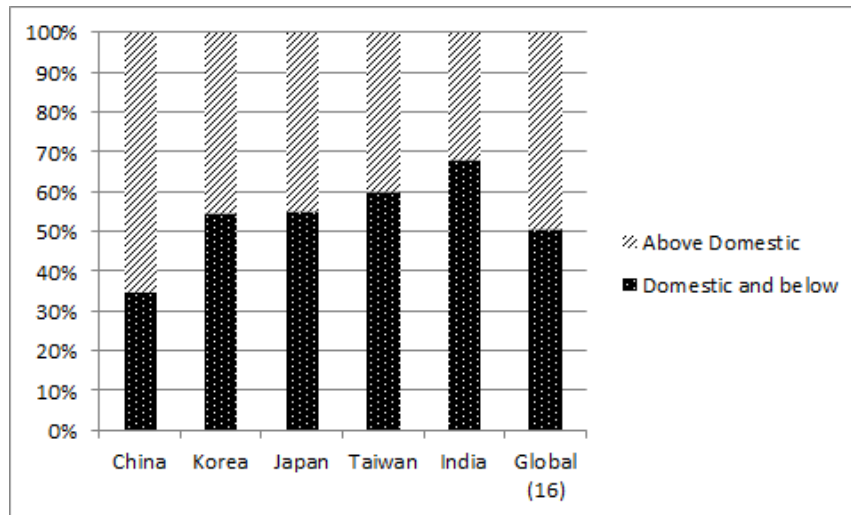


**Figure 2:** Changing News Share of Articles mentioning IPCC among CC/GW Keyword Articles (Notes: \*Third Assessment Report, \*\*Fourth Assessment Report).

- 40 The degree of attention to the IPCC can vary irrespective of the intensity of coverage of climate change. Here we find that Japan, Taiwan and China were well below the global average until 2003. The 2005 entry into force of the Kyoto Protocol did not stir up Japanese attention to the IPCC. The India data starts in 2002, and there we find the opposite, that India is well above the global average. Indian attention may well reflect the fact that Rajendra Pachauri was appointed chair of the IPCC in 2002. This was a source of national pride to the Indian papers, and their attention increased in 2007 with the award of the Nobel Prize. With that and the 2007 Fourth Assessment Report, all the Asian societies took a sudden and enormous leap in attention to the IPCC. Once again as with its 2009 leap in attention to climate change, in 2007 China's leap in attention to the IPCC outstripped all others. Yet, it subsequently dropped to the global average despite China's ensuing 2009 leap in attention to climate change around the upcoming COP 15 in Copenhagen. The other Asian societies also fell sharply in attention to the IPCC, as did the global average. The low level of attention paid by Taiwan to the IPCC may result from its lack of membership in the United Nations, the parent body of the IPCC.
- 41 The news share indicates the degree of attention a society's press gives to the general issue of climate change. Yet, this content can be located at different scales. Climate change news can be reported at the global scale where it concerns meetings through the United Nations to forge a global agreement among most societies of the world or it can concern ecological effects that affect the whole world, such as the melting of the polar ice caps. Climate change news can also be of increasingly narrow scale, concerning international negotiations among a limited set of societies or regional within a bloc of societies, such as the European Union or the Association of South East Asian Nations. Much climate change news occurs at the scale of a whole society and its government, which we call "domestic." [3] Additionally, it can be at the level of sub-domestic divisions such as provinces, prefectures or, in the US case, states. Furthermore it can be even very micro, in this scale, about climate change events in cities, towns, villages and their micro-ecologies in a single locale.

Consequently, all of these levels deserve their own analyses.

- 42 For the purposes of this initial broad comparison of the Asian societies, we divide the whole scale into two categories, International (foreign, regional, bi or multi-lateral and global) versus Domestic and Below (in cases except Taiwan, this is usually called the nation level, plus the provincial/state and local) (Figure 3). This data comes from the project's detailed coding of newspaper articles from 2007 and 2008, as described above (with Level 2 coding).

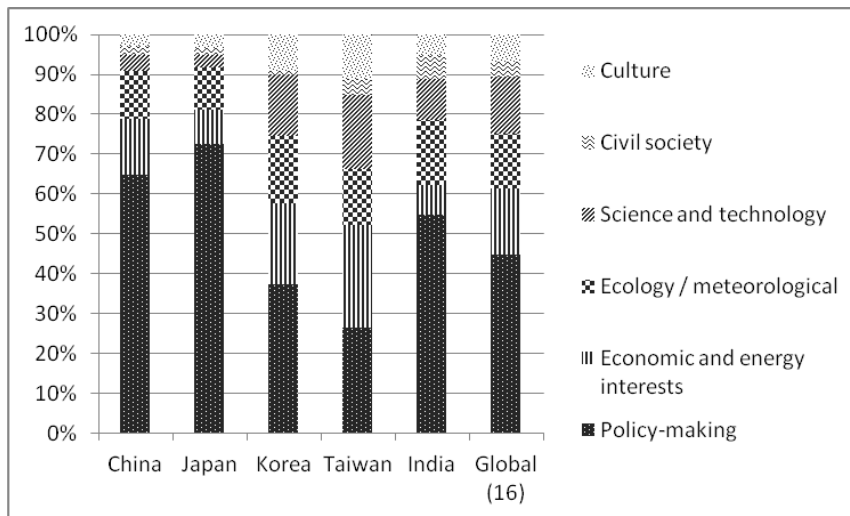


**Figure 3:** Scale of News — International versus Domestic and Below 2007-8.

- 43 The findings in Figure 3 show that China and India stand at opposite ends of this spectrum. The Chinese press reported the most climate change news from the international level and the Indian press reported the most from the domestic level. Both distinctly varied from the global average. The other three Asian societies stand in-between them with their domestic reporting slightly exceeding the global average. The findings indicate that the China newspaper discourse sphere is much more focused on the international level of climate change news than other Asian societies, while India is the least. The factors responsible for this divergence may be multiple; their explanation will require more analysis of the data than possible within this short essay, and will be forthcoming in other venues. However, it is possible to get some indication of these factors by examining how the different societies frame their international news.
- 44 At the most general level of coding, we coded the framing of climate change into six major themes. The six Thematic Frames were: policy-making, economy and energy, ecology/meteorology (effects of climate change on weather, biosphere, ecosystems), science and technology, civil society (movements, gatherings, NGOs, protests, conflicts) and culture (morality, responsibility, public opinion, movies, books) (Boykoff 2007). An article can report about climate change using one or more of these frames as context. While an article discussing the domestic or international process of shaping and creating policies that bear upon climate change would be coded as policy-making. On the other hand, an article using the culture frame will discuss moral and normative issues of climate change, such as the proper division of responsibility and burden of reductions

between the developed and the developing countries. Reportage on popular activities such as celebrations or gatherings held in honor of Earth Day would be coded as civil society. However, an article focusing on statements quoted from speeches at such a gathering that stressed the moral duty to reduce emissions would be coded as culture. One article can be given more than one thematic frame.

- 45 This essay examines the engagement of the newspaper discourse spheres of Asian societies with the international level of climate change events of all six types. Differences in the frames used to characterize the international climate change news signify something of the national orientations towards climate change as a global issue.



**Figure 4:** Climate Change Frames: International Scale\* 2007-2008 (\*Above domestic refers to regional, international, and global scales of news).

- 46 In their framing of international climate change news, for Japan and China the policy-making frame greatly exceeds any other frame and that frame really dominates their international climate change news (Figure 4). Policy-making is also by far the largest single frame for India. All three societies exceed the global (16 Compon case) average for policy-making. However, in dramatic contrast, South Korea and Taiwan stand at the other extreme. They fall far below the global average for policy-making. To the contrary, in the Taiwan press, the economic and energy frame is the single largest frame and this frame is also very large for South Korea. Both exceed the global average. In comparison to China and Japan, South Korea and Taiwan pay much more attention to international cultural pronouncements about climate change. While India pays much more attention than any other Asian society to international civil society events about climate change.

## Discussion

- 47 The findings reveal very distinct patterns of orientation toward engagement with and incorporation into the emerging UN-centered international community of climate change knowledge, norms and

rules. This following discussion will offer some speculation as to the distinct trajectories and profiles of the five Asian societies and why they might appear. At the current point in the analysis of the Compon project data, the explanatory speculations offered here can only be, at best, educated guesses. Rather than offering empirical data analysis on a precise point, the speculations draw upon general background knowledge about the society and are certainly open to discussion and refutation. These speculations and any ensuing discussions may be fruitful for establishing hypotheses to be tested by more targeted data analysis in later papers.

- 48 In considering the case trajectories and profiles, it is helpful to consider the four pieces of evidence in relation to each other. When discussing the implications of Figure 1, it is useful to consider it in tandem with Figure 2, which shows a related sort of news share. Whereas Figure 1 shows the relative attention given by the newspapers to the general issue of climate change, Figure 2 shows the relative attention to the IPCC as a topic within those climate change articles. The first is important as a measure of the newspaper discourse sphere's general concern with climate change. Conversely, the second indicates the importance attributed to the global consensus about the science of climate change as represented by the IPCC. In this regard, Figure 3 shows the proportion of a case's newspaper discourse sphere devoted to climate change news at the international versus domestic scale in 2007-2008. This figure need not replicate the general news share of climate change news because such news can concern domestic sites as well, such as domestic policymaking or domestic droughts. Within that international proportion, Figure 4 reveals the relative proportion of news framed as each of the six topical frames. As it shows, some cases are far more concerned than others with international climate change policymaking.
- 49 In this interactive light, let us discuss the trajectories and profiles of the 5 Asian cases. In 1997, as the host of COP3, the Japanese newspaper discourse sphere, as would be expected, exhibited extremely high attention to climate change. As noted above, this attention diminished to the global average by 2003 and thereafter stayed around that average in its gradual but bumpy rise. In the pivotal 1997 year, though, puzzlingly the Japanese press did also not pay commensurately intense attention to the IPCC. This low level of attention continued to 2010, except for a single jump in 2007 when the IPCC had its year of glory. As Figure 3 shows, the Japanese press focused a little less than half of its climate change articles on the international level, around the average of both the Asian societies and the 16 cases as a whole. However, within those international articles, as Figure 4 indicates, the Japanese press devoted the vast majority of its attention to policymaking. While the exact focus of this attention must be verified by more detailed data analysis, it is highly likely that the focus was on policy formation related to the U.N sponsored global agreements. The success of the Kyoto Protocol remained an issue of intense national symbolic pride for Japan (Schudson 2003). 2008 was the first year of the 2008-2009 Kyoto Commitment period, when societies were supposed to have attained their targets and Japan was acutely aware of its own problems. However, Japan paid little attention to culture, civil society or even science coming from the international level.



- 50 Other Asian societies did not need to worry about attaining their Kyoto Protocol targets because they had none. The Kyoto Protocol targets only applied to the Annex 1 developed countries. In essence, the Kyoto Protocol recognized that the less developed societies, compared to the already developed ones, had a carbon right to continue development and economic growth even if it meant increased emissions. The Protocol placed the burden of initial emissions reductions on the already developed countries. Without the obligation of reduction targets, compared to the global average during the period from 1997 to 2006, the newspapers of India, South Korea and Taiwan paid relatively little attention to climate change. In 2007, along with the global jump, they did also jump in attention to climate change, though still far below the global level (Figure 1). They continued slightly upward in 2009 before the COP15 in Copenhagen. In 2010, India finally reached the global average.
- 51 In terms of attention specifically to the IPCC, in 2007 both India and South Korea jumped steeply upward to meet the global average, and afterward traced the steep fall in global attention. While showing an increase in IPCC attention in 2007, Taiwan still stayed far below the global average (Figure 2). In 2007-2008, among the Asian societies, India paid the least amount of attention to international climate change news (Figure 3). Unlike other societies, India's high attention to the IPCC was not only to it as an international organization, but also as a domestic organization. With Rajendra Pachauri as the head of the IPCC, joy in the Nobel Prize became a matter of domestic celebration. The Indian press' strong coverage of international ecological and meteorological aspects of climate change revealed a national concern with those issues on a global scale. For South Korea, while its largest frame was also political, it also showed strong economic framing of international climate change. This trend became even more pronounced in Taiwan, where the economic frame became the largest one. Taiwan, of course, not a nation, did not formally participate in any of the UN-sponsored global climate change activities (Figure 4). South Korea and Taiwan displayed a focus on international climate change as an economic issue and also as a science and technology issue. Both of these frames may have been related to their extreme economic dependence upon foreign trade and determination to take advantage of new markets in green products.
- 52 China displayed a very distinct trajectory. The Chinese press largely ignored climate change until 2003. Thereafter, the issue embarked upon a rapid and striking ascent. It was spurred by successive international conferences related to the formation of the post-Kyoto agreement, which would involve China. It responded to the 2005 entry of the Kyoto Protocol into force, even more so to the 2007 Bali Roadmap, and then jumped to an extreme peak before the 2009 COP15 in Copenhagen which was supposed to create a substantive post-Kyoto agreement. By 2009, the Chinese newspapers had become by far the most attentive in Asia and indeed in the world (as indicated by the seventeen societies in the Compton sample). Just before that, in 2007, the attention of the Chinese press to the IPCC also skyrocketed (Figure 2), but by 2009 it had plummeted back down again. During the 2007-2008 period, the Chinese papers devoted fully 75% of their news on climate change to the international scale, far higher than any other Asian society and the

global average. Within this international news, the Chinese press framed climate change mostly as a policymaking issue.

- 53 However, the reasons for China's interest in the international policymaking frame differed greatly from Japan's. In 2007, China's international climate change focus was on the IPCC (Figure 2). Yet as Figure 4 reveals, the Chinese newspaper public sphere displayed little interest in the increasingly determinative science reported by the IPCC. Rather, it seems that interest must have been due to the IPCC's influence in determining the future of global climate change policy formation. Evidently, given its rising coverage, between 2003 and 2008 the Chinese government decided to move from largely ignoring the issue to entering fully into the global climate change negotiations at the upcoming venue of COP15 in Copenhagen. This was likely due to the effect COP15 would have on the constitution of a post-Kyoto climate change agreement that would have to include the developing societies like China and India.

## **Conclusion**

- 54 The study reveals the slow, but continuing growth of an international community of agreement and concern about global climate change in general and in Asia. The data analysis in this study demonstrates this assertion by the content analysis of the Asian societies' major newspapers. This growing global climate change community is centered on the science, norms and rules about climate change sponsored and promulgated by national cooperation taking place through the venue of the United Nations. Since its inception in 1988 with science reports from the IPCC, the growth of this community proceeded through normative agreements with the 1992 UN Framework Convention on Climate Change and more solidly with reductions targets for industrialized societies from the 1997 COP3 Kyoto Protocol. COP3 brought about a crucial transition from norms to rules for the industrialized societies. People have expressed disappointment and frustration with the relatively weak effects of the Kyoto Protocol in reducing the growth of global emissions. This has led some critics to declare the futility of the global negotiation approach, arguing instead that agreements among smaller numbers of countries or more local actors are the only way to successful reductions.
- 55 From a longer term view, the rising trend lines of climate change coverage (Figure 1) can indicate the successful diffusion of norms of concern and action formed at the 1992 UNFCCC meetings in Rio, as described above. The level of global and Asian coverage of climate change has been on a jagged but steadily upward rise. This might indicate a gradually growing cohesion and integration among the UN members—virtually all of whom signed the UNFCCC—around this common normative concern. Arguably, increasing coverage of global climate change in the newspapers would seem to indicate increasing acceptance of the UN norm by the society. However, several objections can be made against this interpretation. One is that coverage may also contain refutation. This argument though would seem unlikely as strong denialism in a society would be more likely

to repress coverage rather than increase it. However, there exists an even more potent counter-hypothesis— that the growing coverage of climate change is due not to norm diffusion from the UNFCCC, but to the growing incidence of disasters related to climate change at the global and societal levels.

- 56 Evidence bearing upon this counter-hypothesis exists right before our eyes in Figure 1 with the example of Taiwan. In relation to both the global average and to the other Asian societies, Taiwan has remained at the rock bottom in terms of coverage of climate change and attention to the IPCC. It is not the case that Taiwan is less vulnerable to storms and other disasters riled up by climate change. Therefore, the crucial difference must be the fact that Taiwan is not a member of the United Nations or participant in its events and institutions. This exception “proves the rule” as the old saying goes (or in scientific terms, supports the hypothesis). Taiwan’s low coverage of climate change supports the hypothesis that membership in the UN system played a strong role in drawing societies into a global community of concern about climate change as evidence by their increasing coverage of the problem. Future analysis and publication of the Compton data will help clarify this point.
- 57 The level of coverage of the IPCC is another important indicator that shows serious engagement with a second component of the UN global community—the dominant scientific view about the anthropogenic causes and serious consequences of climate change. During the 1990s, some Asian societies had been quite skeptical of the IPCC science reports. Weak in their own scientific capacities, they had worried that the IPCC reports might just be Western propaganda designed to slow down their just starting economic growth. The acceptance or rejection of the IPCC reports as objective credible science by Asian societies is quite crucial to the formation of a global community of cooperation on the problem.
- 58 Unlike the trends in Figure 1, the lines in Figure 2 do not indicate a rising long-term global trend of attention to the IPCC. Rather, they indicate an episodic coverage rising in response to a new report but then falling back down. As noted above, media theorists have described this pattern as an issue-attention cycle. However, this cycle may not be like a sine wave with repeated equal peaks and valleys. The global and Asian peak of response to the IPCC Fourth Assessment Report (2007) was considerably higher than the peak of response to the Third Assessment Report (2001). In particular, the Asian societies shot up in 2007. Does this indicate a future of increasingly higher peaks with each new IPCC report (the next is due in 2014)? If so, the 2007 peak might indicate a shedding of old suspicions among the Asian societies, a greater willingness to embrace the IPCC as valid science. Or was the high peak in 2007 a fluke due to special circumstances? There certainly were special circumstances as that was when the IPCC received the Nobel Prize. Answering these questions more confidently will have to wait until we can measure societal response to the Fifth Assessment Report, due in 2014.

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## Notes

The co-authors represent their research teams. Jeffrey Broadbent (University of Minnesota), Sun-Jin Yun (Seoul National University, South Korea), Dowan Ku (Environment and Society Research Institute, South Korea), Kazuhiro Ikeda (Sophia University, Japan), Keiichi Satoh (Hitotsubashi University, Japan), Sony Pellissery (National Law School, Bangalore, India), Pradip Swarnakar (ABV – Indian Institute of Information Technology and Management, India), Tze-Luen Lin (National Taiwan University, Taiwan), Ho-Ching Lee (National Central University, Taiwan) and Jun Jin (Tsinghua University, China). The co-authors and team members gratefully acknowledge the following sources of support for this research: SSRC Abe Fellowship (PI Broadbent); Institute of Global Studies, University of Minnesota; NSF Grant # BCS-0827006 (PI Broadbent); Japan Foundation Center for Global Partnership (PIs Hasegawa and Broadbent); National Research Foundation (NRF) Grant funded by the Korean Government (MEST) (NRF-2008-220-B00013) (PI Yun); Scientific Research Fund for Basic Research Japan Society for the Promotion of Science Standard Research Grant # 22243036 (PI Hasegawa); China National Planning Office of Philosophy and Social Science Young Scholar Research Grant for Social Science Grant number 11CSH02 (PI Jin); National Science Council of Taiwan Grant number 100-2410-H-008-029-MY3 (PI Lee); NSC of Taiwan grant# 98-2621-M-002-022 (PI Lin). We are also grateful for the opportunities to present this work and receive comments at a number of venues: the annual conference of the Association for Asian Studies, Toronto, Canada (March 18, 2012); the 3rd International Symposium on Environmental Sociology in East Asia at The Catholic University, Bucheon City, South Korea (21-23 October 2011); the conference on Global Challenges in Asia: New Development Model and Regional Community Building, Seoul National University Asia Center, Seoul, Korea. October 19-21, 2011, as well as panels and individual papers in other venues. The first co-author (Broadbent) would also like to thank Keio University and his host Professor Yoshiaki Kobayashi for their generous accommodation during his Abe Fellowship period in Japan that enabled the start of this entire project.

[1] Information on the full Compon project and its teams can be found on the Compon website at [www.compon.org](http://www.compon.org).

[2] Perhaps a more valid measure of the media discourse attention to the IPCC would be to multiply the data in Figure 1, the climate change news share, by the data in Figure 2, the IPCC news share. That would give us the total presence of the IPCC within all the news, and hence its presence within the society's discourse field. But for now, we will use the present figure.

[3] Because one of our cases, Taiwan, is not a nation, we use the generic term domestic instead of national.

## References

Adger, N. et. al. 2007. "Summary for Policymakers." in *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, edited by IPCC. Cambridge, United Kingdom and New York, NY: Cambridge University Press.

Agency, United States Environmental Protection. 2013. "Global Greenhouse Gas Emissions" Data. Accessed 28 June 2013 at [www.epa.gov/climatechange/ghgemissions/global.html#four](http://www.epa.gov/climatechange/ghgemissions/global.html#four).

Alley, Richard B., et. al. 2007. "Summary for Policy-Makers" in *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, edited by S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, H.L. Miller. Cambridge, United Kingdom and NY, USA: Cambridge University Press.

Anderson, Kevin and Alice Bows. 2011. "Beyond 'dangerous' climate change: emission scenarios for a new world." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 369:20-44.

Antilla, Liisa. 2005. "Climate of scepticism: US newspaper coverage of the science of climate change." *Global Environmental Change Part A* 15:338-352.

Betsill, Michele M and Harriet Bulkeley. 2006. "Cities and the multilevel governance of global climate change." *Global Governance: A Review of Multilateralism and International Organizations* 12:141-159.

Bodansky, Daniel. 2009. *The art and craft of international environmental law*. Cambridge, MA: Harvard University Press.

Bolin, Bert. 2007. *A History of the Science and Politics of Climate Change*. Cambridge, New York: Cambridge University Press.

Boykoff, J.M. 2011. *Who Speaks for the Climate? Making Sense of Media Reporting on Climate Change*. Cambridge: Cambridge University Press.

Boykoff, M.T. 2007. "From convergence to contention: United States mass media representations of anthropogenic climate change science." *Transactions of the Institute of British Geographers* 32:477-489.

Boykoff, Maxwell. 2008. "The cultural politics of climate change discourse in the UK tabloids." *Political Geography* 27:549-569.

Boykoff, Maxwell T. and Jules M. Boykoff. 2007. "Climate change and journalistic norms: A case-study of US mass-media coverage." *Geoforum* 38:1190-1204.

Broadbent, Jeffrey. 2002. "From Heat to Light? Japan's Changing Response to Global Warming." Pp. 109-142 in *Sovereignty under Challenge, How Governments Respond*, edited by J. Montgomery and N. Glazer. New Brunswick: Transaction.

- . 2010. "Science and Climate Change Policy Making: A Comparative Network Perspective." Pp. 187-214 in *Adaptation and Mitigation Strategies for Climate Change*, edited by A. Sumi, K. Fukushi, and A. Hiramatsu: Springer Japan.
- Carvalho, A. 2010. "Media(ted) discourses and climate change: a focus on political subjectivity and (dis)engagement." *Wiley Interdisciplinary Reviews-Climate Change* 1:172-179.
- Center for Global Development. 2013. "Mapping the Impacts of Climate Change" at [www.cgdev.org/page/mapping-impacts-climate-change](http://www.cgdev.org/page/mapping-impacts-climate-change). Accessed 28 June 2013.
- Downs, Anthony. 1972. Up and Down with Ecology-The Issue-Attention Cycle." *Public Interest* 28:38-50.
- Ferree, Myra Marx. 2002. *Shaping abortion discourses democracy and the public sphere in Germany and the United States*. Cambridge, UK New York: Cambridge University Press.
- Fisher, D.R., P. Leifeld, and Y. Iwaki. 2012. "Mapping the ideological networks of American climate politics." *Climatic Change*:1-23.
- Frank, David John, Ann Hironaka, and Evan Schofer. 2000. "The Nation-State and the Natural Environment over the Twentieth Century." *American Sociological Review* 65:96-116.
- Gamson, William. 1992. *Talking Politics*. New York: Cambridge University Press.
- Garcia, Denise. 2010. "Warming to a redefinition of international security: The consolidation of a norm concerning climate change." *International Relations* 24:271-292.
- Gough, Clair and Simon Shackley. 2001. "The respectable politics of climate change: the epistemic communities and NGOs." *International Affairs* 77:329-346.
- Haas, P. 1992. "Obtaining international protection through epistemic consensus" in *Global Environmental Change and International Relations*, edited by I. H. Rowlands and M. Greene. Basingstoke: Macmillan.
- Hansen, James E. 2009. *Storms of my grandchildren : the truth about the coming climate catastrophe and our last chance to save humanity*. New York: Bloomsbury USA.
- Hanson, Susan, Robert Nicholls, Nicola Ranger, Stéphane Hallegatte, Jan Corfee-Morlot, Celine Herweijer, and Jean Chateau. 2011. "A global ranking of port cities with high exposure to climate extremes." *Climatic Change* 104:89-111.
- Herman, Edward S and Noam Chomsky. 2002. *Manufacturing consent: The political economy of the mass media*. New York: Pantheon.
- Hulme, Mike and Martin Mahony. 2010. "Climate change: What do we know about the IPCC?" *Progress in Physical Geography* 34:705-718.

- Kabashima, Ikuo and Jeffrey Broadbent. 1986. "Referent Pluralism: Mass Media and Politics in Japan" *Journal of Japanese Studies* 12:329-361.
- Lau, Raymond WK. 2004. "Critical realism and news production." *Media, Culture & Society* 26:693-711.
- Liu, X., E. Lindquist, and A. Vedlitz. 2011. "Explaining Media and Congressional Attention to Global Climate Change, 1969-2005: An Empirical Test of Agenda-Setting Theory." *Political Research Quarterly* 64:405.
- McCombs, Maxwell. 2004. *Setting the Agenda: the Mass Media and Public Opinion*: Polity Press Published in the USA by Blackwell Publishers Inc.
- McCombs, Maxwell E. and Donald L. Shaw Shaw. 1972. "The Agenda-Setting Function of Mass Media." *The Public Opinion Quarterly* 36:176-187.
- McCright, A. M. and Riley Dunlap. 2000. "Challenging Global Warming as a Social Problem: An Analysis of the Conservative Movement's Counter-Claims." *Social Problems* 47:499-522.
- Moon, Ban-Ki. 2009. "Opening Remarks to the World Business Summit on Climate Change, 2009." United Nations News Centre. Accessed 23 June 2013 at [UN News Centre](#).
- New, M., D. Liverman, H. Schroder, and K. Anderson. 2011. "Four degrees and beyond: the potential for a global temperature increase of four degrees and its implications." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 369:6-19.
- Nisbet, Matthew C. 2009. "Communicating Climate Change: Why Frames Matter for Public Engagement." *Environment* 51:12.
- Oreskes, N. 2004. "The scientific consensus on climate change." *Science* 306:1686-1686.
- Ragin, Charles. 1987. *The Comparative Method*. Berkeley: University of California Press.
- Roberts, J.T. and P.E. Grimes. 1997. "Carbon intensity and economic development 1962-1991: a brief exploration of the environmental Kuznets curve." *World Development* 25:191-198.
- Schudson, Michael. 2003. *The sociology of news*, New York: Norton
- Snow, David A., E. Burke Rochford, Jr., Steven K. Worden, and Robert D. Benford. 1986. "Frame Alignment Processes, Micromobilization, and Movement Participation." *American Sociological Review* 51:464-481.
- Sonnett, John. 2010. "Climates of risk: A field analysis of global climate change in US media discourse, 1997-2004." *Public Understanding of Science* 19:698.
- Soroka, Stuart. 2003. *Agenda-Setting Dynamics in Canada*.

Vancouver, Canada: University of British Columbia Press.

Tiberghien, Yves and Miranda A. Schreurs. 2007. "High Noon in Japan: Embedded Symbolism and Post-2001 Kyoto Protocol Politics." *Global Environmental Politics* 7:70-91.

Tilly, Charles. 1984. *Big Structures, Large Processes, Huge Comparisons*. New York: Russell Sage Foundation.

Trumbo, Craig. 1996. "Constructing climate change: claims and frames in US coverage of environmental issues." *Public Understanding of Science* 5:269-283.

Van der Hoeven, Maria 2012. *CO2 emissions from fuel combustion—highlights*. Paris, France: International Energy Agency. Accessed 28 June 2013 at [IEA Statistics](#).

Wheeler, David. 2011. "Quantifying vulnerability to climate change: implications for adaptation assistance." in *Center for Global Development Working Paper No. 240*, Washington, DC: Center for Global Development

Yamin, Farhana and Joanna Depledge. 2005. *The International Climate Change Regime: A Guide to Rules, Institutions and Procedures*. New York: Cambridge University Press.

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GSJ is published by [SBIGS](#), the Stony Brook Institute for Global Studies  
Stony Brook University, Stony Brook, NY 11794-3380  
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